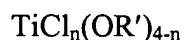


CLAIMS

What is claimed is:

1. A process for forming a catalyst for the polymerization of olefins, comprising:
 - (a) combining a chlorinating agent with a magnesium alkoxide compound to form a magnesium-titanium-alkoxide adduct; and
 - (b) combining the magnesium-titanium-alkoxide adduct with an alkylchloride compound to form a magnesium chloride support.
2. The process of claim 1, wherein the magnesium alkoxide is formed by reacting a magnesium alkyl with an alcohol generally represented by the formula ROH, wherein R is an alkyl group containing about 1 to 20 carbon atoms.
3. The process of claim 2 wherein the magnesium alkyl is butylethylmagnesium.
4. The process of claim 3, wherein the alcohol is 2-ethyl hexanol.
5. The process of claim 1, wherein the chlorinating agent is generally represented by the formula:



wherein R is an alkyl, cycloalkyl, or aryl group, and wherein n is from 1 to 3.

6. The process of claim 5, wherein n is 1.
7. The process of claim 1, wherein the chlorinating agent is $\text{ClTi}(\text{O}^i\text{Pr})_3$.
8. The process of claim 4, wherein the chlorinating agent is $\text{ClTi}(\text{O}^i\text{Pr})_3$.
9. The process of claim 1, wherein the alkylchloride compound is selected from the group consisting of benzoyl chloride, chloromethyl ethyl ether, and t-butyl chloride.
10. The process of claim 1, wherein the alkylchloride compound is benzoyl chloride.
11. The process of claim 8, wherein the alkylchloride compound is benzoyl chloride.

12. The process of claim 11 wherein the benzoyl chloride / BEM molar ratio is from about 1 to about 20.
13. The process of claim 11 wherein the benzoyl chloride / BEM molar ratio is from about 1 to about 10.
14. The process of claim 11 wherein the benzoyl chloride / BEM molar ratio is from about 4 to about 8.
15. The process of claim 1, wherein the reacting the magnesium-titanium-alkoxide adduct with the alkylchloride compound also forms a by-product selected from the group consisting of an ether compound, an alcohol compound, and mixtures thereof.
16. The process of claim 1, further comprising combining the magnesium chloride support with titanium tetrachloride to form a catalyst.
17. The process of claim 11, further comprising combining the magnesium chloride support with titanium tetrachloride to form a catalyst.
18. The process of claim 16, further comprising washing the magnesium chloride support prior to the contacting the magnesium chloride support with the titanium tetrachloride.
19. The process of claim 17, further comprising washing the magnesium chloride support prior to the contacting the magnesium chloride support with the titanium tetrachloride.
20. A catalyst for polymerizing olefins, the catalyst being formed by a process comprising:
 - (a) combining a chlorinating agent with a magnesium alkoxide compound to form a magnesium-titanium-alkoxide adduct;

- (b) combining the magnesium-titanium-alkoxide adduct with an alkylchloride compound to form a magnesium chloride support; and
 - (c) combining the magnesium chloride support with titanium tetrachloride to form a catalyst.
- 21. The catalyst of claim 20, wherein the catalyst has an activity of about 10,000 to about 40,000 g polymer/g catalyst/hour.
- 22. The catalyst of claim 21, wherein the catalyst consists essentially of agglomerated spheroids having an average particle size (D_{50}) of about 10 to about 30 microns.
- 23. A polymer produced by combining one or more olefin monomers under reaction conditions suitable for polymerization with a catalyst formed by a process comprising:
 - (a) combining a chlorinating agent with a magnesium alkoxide compound to form a magnesium-titanium-alkoxide adduct;
 - (b) combining the magnesium-titanium-alkoxide adduct with an alkylchloride compound to form a magnesium chloride support; and
 - (c) combining the magnesium chloride support with titanium tetrachloride to form a catalyst.
- 24. The polymer of claim 23, wherein the polymer is polyethylene having a molecular weight distribution of about 4 to about 10.
- 25. The polymer of claim 24, wherein the polyethylene has less than about 5 wt. % fines.
- 26. The polymer of claim 25, wherein the polyethylene has a average particle size (D_{50}) of about 200 to about 800 microns.
- 27. Film, fiber, pipe, or an article of manufacture comprising the polymer of claim 23.